



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/589,293

04/27/2007

Manfred Danziger

102133-16

6840

27388

7590

07/01/2010

Hildebrand, Christa

Norris McLaughlin & Marcus PA

875 Third Avenue, 8th Floor

New York, NY 10022

EXAMINER

ZACHARIA, RAMSEY E

ART UNIT

PAPER NUMBER

1787

MAIL DATE

DELIVERY MODE

07/01/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/589,293	<b>Applicant(s)</b> DANZIGER, MANFRED	
	<b>Examiner</b> Ramsey Zacharia	<b>Art Unit</b> 1787	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 10-26 is/are pending in the application.
- 4a) Of the above claim(s) 3,4,13-24 and 26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,10-12 and 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/14/2006</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Claims 16-24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was made **without** traverse in the reply filed on 13 April 2010.

2. Applicant's election with traverse of species (a) in the reply filed on 13 April 2010 is acknowledged. Upon further consideration and in view of the applicant's amendment to the claims, species (d) (i.e. metal polymers) is hereby rejoined to elected species (a). As such, claims 3, 4, 13, 14, and 26 are withdrawn and claims 1, 2, 10-12, and 25 are subject to examination.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 2, 10-12, and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. The term "low active surface energy" in independent claims 1 and 10 is a relative term which renders the claims indefinite. The term "low active surface energy" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Use of

Art Unit: 1787

the term "low active surface energy" renders the surface energy of the polymer compound indefinite.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2, 10, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Liepins (US 4,390,567).

Liepins teach a metal coating on a polymeric material comprising a portion that is sorbed or diffused into a polymeric material (column 2, line 66-column 3, line 8). The polymeric material may be perfluorocarbon polymer, i.e. a polymer with a low active surface energy (column 4, lines 44-50). The metal diffuses into the polymer to a depth of about 5-6  $\mu\text{m}$  (column 6, lines 41-43). A solid metal layer is then formed over the metal sorbed/diffused into the polymer (column 7, line 55-column 8, line 4). The polymeric material reads on the substrate material, the solid metal layer corresponds to the another material, and the metal sorbed/diffused to a depth of 5-6  $\mu\text{m}$  corresponds to the non-structured transition region. Since the metal is sorbed/diffused from solution into a swollen polymer, the resulting metal deposits would be expected to have a structure in the nanometer range. Moreover, one skilled in the art would expect a greater concentration of metal at shallower diffusion depths such that the ratio of

Art Unit: 1787

polymer:metal would change from substantially polymer at the greatest depths to substantially metal at the shallowest depths.

8. Claims 1, 2, 10-12, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al. (Appl. Phys. Lett. **51**(2), 13 July 1987).

Chang et al. teach a improving the adhesion between copper and polytetrafluoroethylene by pre-sputtering prior to copper deposition (see abstract). The PTFE corresponds to the polymer compound with a low active surface energy and the copper corresponds to the second material of claims 1 and 10. The pre-sputtering alters the surface morphology of the PTFE, resulting in a regularly textured surface with the height of the surface texture increasing with sputtering time (see paragraph bridging pages 104 and 105). The PTFE was pre-sputtered with 500 eV argon ions at times ranging from 10 seconds to over 5 min, including a time of about 1 min (see paragraph bridging columns of page 103 and Figure 1). This is the same substrate (PTFE) exposed to the same ions ( $\text{Ar}^+$ ) at the same voltage (5 keV) lasting the same exposure time (1 min) for depositing the same material (copper) as Example 1 of the instant application (see paragraph 0028 on page 7) leading to similar results (i.e. increased bond strength). As such, one of ordinary skill in the art would expect the treatment conducted by Chang et al. to inherently result in a copper coated PTFE substrate having the same morphology as that of instant Example 1 and thus meet the morphological and substrate:second material ratio limitations of instant claims 1 and 10.

Regarding claims 12 and 25, since the sputtering under the conditions taught by Chang et al. also result in the creation of radicals, the transition layer between the PTFE and the copper

Art Unit: 1787

would be expected to have at least some PTFE that has reacted with the copper - i.e. at least some metal polymer.

### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Zacharia whose telephone number is (571) 272-1518. The examiner is working a part-time schedule and is periodically in the office.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho, can be reached at (571) 272-1123. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Ramsey Zacharia/

Primary Examiner, Art Unit 1794